

ON SOME REARED PARASITIC HYMENOPTEROUS INSECTS
FROM CEYLON.

By L. O. HOWARD, PH. D.

Honorary Curator of Insects.

and

WM. H. ASHMEAD,

Custodian of the Hymenoptera.

MR. E. ERNEST GREEN, of Panduloya, Ceylon, has long been studying the Coccidæ of that interesting region, and has in preparation a large work in parts entitled *The Coccidæ of Ceylon*.¹ In the course of his studies of the Coccidæ, he has reared certain hymenopterous parasites from them. These he has sent to the U. S. National Museum for names, sending with them a few parasites of lepidopterous larvæ which he has incidentally reared.

The parasitic Hymenoptera of Ceylon are not well known. A few species have been described by Walker and a number of others by Motschulsky. It is not surprising, therefore, that the majority of the species sent by Mr. Green proved to be new, and the material is of additional interest for the reason that in every case the parasite is associated with its host insect. The most striking feature of the sending is the number of parasites reared from one of the lac insects—*Tachardia albizzia*. It will be interesting to state that Mr. Green has found several other insects associated with this economically important Coccid, among them a Phlæothrips which feeds on the excretion of the bark-lice, and a Tineid larva which preys upon the Coccid itself.

Of the insects here reported upon, Dr. Howard has studied the Chalcididæ and Mymaridæ and Mr. Ashmead the Ichneumonidæ and Braconidæ.

Family CHALCIDIDÆ.

Subfamily APHELININÆ.

Genus COCCOPHAGUS, Westwood.

Coccophagus, WESTWOOD, Phil. Mag., III, 1833.

COCCOPHAGUS ORIENTALIS, new species (Howard).

Female.—Length, 1.2 mm.; expanse, 2.5 mm. Antennæ with scape somewhat flattened from side, appearing from this view large and heavy; bulla distinct, strongly notched from below, scape equal in

¹ Shortly to be published by Dulau & Co., of London.

length to pedicel and first two funicle joints, pedicel a little longer than wide, triangular, first funicle joint longer than pedicel and longer than second funicle joint, second and third joints each successively shorter, but all of the same width, as also the two basal joints of club: the longitudinal elevations of funicle joints and club very strong and numerous, funicle joints with stout bristles in addition. Head and thorax with short and rather close black hairs, very faintly shagreened, but shining; hind thighs somewhat thickened, spur of middle tibiae unusually long but slender. General color black with strong purplish reflections; all tarsi nearly white, tips of front and middle tibiae also whitish, middle tibial spur white; fore wings infuscated to stigma, nearly hyaline at extreme base, tip perfectly hyaline.

Type.—No. 3248, U.S.N.M. Thirteen specimens, reared by E. Ernest Green, Punduloya, Ceylon, from *Ceroplastes actiniformis*, *Lecanium viride*, *Lecanium coffea*, and *Dactylopius adonidum*. Seems to be an abundant and general scale insect parasite in Ceylon.

Differs radically from all other species of *Coccophagus* known to me with the exception of *C. purpureus*, Ashmead, described from a specimen captured in Florida. The description of the latter species is short, but the wings are said to be entirely fuscous. In color, in the presence of more or less infuscation of the wings, and in the absence of a scutellar spot, the two forms agree.

COCCOPHAGUS FLAVESCENS, new species (Howard).

Female.—Length, 1.2 mm.; expanse, 2.6 mm. Eyes hairy, well separated, ocelli forming a right-angled triangle; antennae long, scape reaching nearly to tip of head; first funicle joint twice as long as pedicel and three times as long as wide; second funicle joint two-thirds as long as first, and three-fourths as long as second; all subequal in width. Club not swollen, as long as two preceding funicle joints together. Thorax well rounded and furnished with sparse, rather long, brown pile: the two apical bristles of the mesoscutellum long, white, each arising from a minute black spot. General surface almost smooth: no shagreening can be discovered. General color dark honey yellow; antennae brownish, a little lighter at joints; dorsal surface of abdomen dusky; the fore wings slightly infuscated.

Male.—What is apparently the male of this species differs radically in color from the female, but in no other important particulars. It is uniformly black with the exception of the tarsi and the tips of middle tibiae, which are dirty white.

Types.—No. 3249, U.S.N.M.; four female and three male specimens reared from *Lecanium coffea*, by E. Ernest Green, Punduloya, Ceylon.

Genus PHYSCUS, Howard.

Physcus, HOWARD, Revis. Aphelininae N. A., Techn. Ser. No. 1, U. S. Dept. Agric., Div. Entom., 1895, p. 43.

PHYSCUS VARICORNIS, Howard.

Coccophagus varicornis, HOWARD, Ann. Rep. U. S. Dept. Agric., 1880, p. 360.
Phycsus varicornis, HOWARD, Revis. Aphelininae N. A., Techn. Ser. No. 1, U. S. Dept. Agric., Div. Entom., 1895, p. 43.

This species, hitherto found only at Washington, District of Columbia; Alameda, California, and Champaign, Illinois, at which points it has been reared respectively from *Aspidiotus ancyclus*, *Chionaspis quercus*, and *Chionaspis americana*, has been reared by Mr. Green in Ceylon from *Chionaspis eleagni*.

Genus ASPIDIOTIPHAGUS, Howard.

Aspidiotiphagus, HOWARD, Insect Life, VI. 1894, p. 230.

ASPIDIOTIPHAGUS CITRINUS, (Craw).

Coccophagus citrinus, CRAW, Destructive Insects, Sacramento, California, 1891.
Aspidiotiphagus citrinus, HOWARD, Insect Life, VI. 1891, p. 231.

This common and widespread parasite of armored scales in the United States and southern Europe was reared by Mr. Green from *Diaspis lunatus*.

Genus APHELINUS, Dalman.

Aphelinus, DALMAN, Svensk. Akad. Handl., p. 181, 1820.

APHELINUS MYTILASPIDIS, LeBaron.

Aphelinus mytilaspidis, LEBARON, Amer. Ent., II, 1870, p. 360.

This species, commonly reared in the United States from *Mytilaspis pomorum*, *Chionaspis pinifolii*, and *Diaspis carueli*, has been reared by Mr. Green from *Chionaspis permutans* and *Chionaspis graminis*.

Genus ENCARSIA, Færster.

Encarsia, FÆRSTER, Kleine Monographien, 1878, pp. 65-66.

The two species which follow differ in some degree from the species described under this genus in the writer's "Revision of the Aphelininae of North America," but the assemblage of characters brings them so close to *Encarsia* that it is not considered advisable to erect a new genus for them.

ENCARSIA PLANCHONIÆ, new species (Howard).

Female.—Length, 0.56 mm.; expanse, 1.16 mm. Funicle joint 1 as long as pedicel; joint 2 considerably longer than 1, and with 3, 4, and 5, subequal in length and breadth; the two terminal joints not so closely united as with other species of this genus, the first one equaling the fourth funicle joint in length and breadth, and the last one pointed at apex and somewhat shorter. All funicle joints with close longitudinal carinae, as with *Coccophagus*. Cephalic border of meso-

scutellum convex, stigmal vein of fore wings short and nearly parallel with costa, marginal vein with five bristles on costal border, these bristles shorter than costal bristles which begin at end of marginal. Hind wings with a single row of discal cilia on apical fourth, this row near costal margin of wing.

General color golden yellow, eyes dark, ocelli reddish, abdomen more or less suffused with brown, joints between segments accentuated, mesoscutum brownish; legs and antennae lighter in color than body.

Type.—No. 3250, U.S.N.M.: two female specimens reared by E. Ernest Green, Punduloya, Ceylon, from *Planchonia delicata*.

ENCARSIA AONIDIÆ, new species (Howard).

Female.—Length, 0.51 mm.; expanse, 1.14 mm. Funicle joint 1 much longer than pedicel, the following joints subequal in length, the terminal joint as with preceding species. Funicle with sparser longitudinal carinae, but two observable from dorsal aspect. Funicle and club clothed with sparse, short, nearly erect bristles—an unique character among the Aphelininae. Cephalic border of mesoscutellum not convex, straight in one specimen and with two slight reentering angles in the other. Stigmal vein of fore wings as with preceding species; marginal vein with nine bristles on costal border, these bristles longer than costal cilia beginning at end of marginal. Hind wings on outer fourth with two rows of discal cilia, one row near costal margin and the other near hind margin.

Color as with preceding species, except that the abdomen is darker.

Type.—No. 3251, U.S.N.M.: two female specimens reared by E. Ernest Green, Punduloya, Ceylon, from *Aonidia corniger*.

Subfamily ENCYRTINÆ.

Genus ENCYRTUS, Latreille.

Encyrtus, LATREILLE, Gen. Crust. et Ins., IV, p. 31, 1809.

ENCYRTUS FLAVUS, Howard.

Encyrtus flavus, HOWARD, Ann. Rep. Dept. Agric., 1880, p. 367.

This species was first found at Los Angeles, California, where it is parasitic upon *Lecanium hesperidum*. Some years later it was reared at Columbus, Ohio, on the same scale on greenhouse plants. Mr. Green has reared it from *Lecanium piperis*.

ENCYRTUS LICHTENSIÆ, new species (Howard).

Female.—Length, 3.3 mm.; expanse, 5.4 mm. Rather closely related to the European *E. cyanifrons*, Dalman. Antennal scape rather strongly widened below; pedicel somewhat longer than first funicle joint; first funicle joint one-half longer than wide, succeeding funicle joints increasing slightly in width but subequal in length; club flattened, as long as two preceding funicle joints together, broader from

side, somewhat truncate, attenuate from above. Head rather triangular from side, eyes proximate, naked, ocelli forming an acute-angled triangle. Mesoscutum with sparse, rather fine punctures, very delicately shagreened, shining; mesoscutellum more coarsely shagreened, without punctures and with a few long hairs at tip, not forming a tuft. Marginal vein short, stigmal and postmarginal long. General color metallic blue-green, mesoscutum somewhat coppery. Pronotum, head, tegulae, and legs dark honey yellow; mesopleura brown; antennal scape and club black, scape brownish near tip; pedicel and funicle joints 1 to 4 infuscated, 5 and 6 white; fore wings almost uniformly infuscated, lighter at base and tip.

Type.—No. 3252, U.S.N.M. Five female specimens reared from *Lichtenstia koebele* by E. Ernest Green, Punduloya, Ceylon.

ENCYRTUS CHIONASPIDIS, new species (Howard).

Female.—Length, 1.2 mm.; expanse, 2 mm. Antennae inserted near mouth, scape slender, pedicel as long as three succeeding funicle joints together; funicle joints 1 to 4 subequal in length but increasing in width; joint 5 twice as long as 4, joint 6 longer than 5 but about as wide. Club swollen at base, pointed at tip, nearly as long as entire funicle. Head with protruding front, eyes well separated, ocelli forming an obtuse-angled triangle; thorax flat, the wide axillae meeting at tips; ovipositor slightly protruding. General surface glistening, punctation almost imperceptible. Abdomen as long as thorax, subovate, acute at tip; marginal, postmarginal, and stigmal veins subequal in length. General color black, with metallic reflections; antennae brown, all legs except coxae pallid; wings hyaline.

Type.—No. 3253, U.S.N.M. Four female specimens reared from *Chionaspis graminis* by E. Ernest Green, Punduloya, Ceylon.

ENCYRTUS PLANCHONIÆ, new species (Howard).

Female.—Length, 1.2 mm.; expanse, 2.8 mm. Body short, stout; thorax nearly plane above; head elongate, subtriangular, when seen from above; eyes nearly as much dorsal as lateral; ocelli forming an acute-angled triangle. Scape inserted near middle of face, slender; pedicel minute; funicle joints as wide as long, club ovate, a little longer than two preceding antennal joints together. Scapulae meeting at tips; mesonotum smooth, slightly glistening, submarginal vein short. General color honey-yellow; anterior edge of mesoscutum dark and slightly metallic; sides of mesoscutum and tip of abdomen concolorous with this.

Type.—No. 3254, U.S.N.M. One female specimen reared from *Planchonina delicata* by E. Ernest Green, Punduloya, Ceylon.

ENCYRTUS TACHARDIÆ, new species (Howard).

Male.—Length, 1.5 mm.; expanse, 3.6 mm. Body stout, thorax well rounded, axillae meeting at tip; antennae inserted at middle of face,

scape not widened; funicle joints subcylindrical, well separated, each with regular, close-set hairs not separated into whorls and not especially long; eyes distant, marginal vein very short, postmarginal and stigmal subequal; mesonotum very finely shagreened, shining. General color metallic blue-green, scutellum with coppery reflections, outer edge of mesoscutum brownish, all legs, tegulae, and mesopleura concolorous, tibiae a little darker, antennae dark brown, scape and pedicel blackish above, wings hyaline, veins dark brown.

Type.—No. 3255, U.S.N.M. Two male specimens reared from *Tachardia albizzia* by E. Ernest Green, Punduloya, Ceylon.

It is undesirable to describe species of Encyrtinae from the male sex alone, but on account of the economic importance of the host insect the writer has considered it advisable to give this insect a name.

ENCYRTUS SOLIDUS, new species (Howard).

Male.—Length, 1.5 mm.; expanse, 3.4 mm. Form robust, compact; abdomen short, triangular, somewhat compressed from sides; axillae separated at tips; antennae inserted slightly below middle of face, scape short, not widened, funicle joints thick and closely united, pubescence extremely short and very dense; joints 2 to 5 subequal in length, joint 5 rather shorter, joint 1 considerably longer; club short, less than four and five in length. Head faintly granulate, mesonotum faintly shagreened. General color black, faintly glistening; antennal scape brownish, pedicel nearly black; flagellum light brown; all coxae and femora nearly black, the femora lighter at tips; front and hind tibiae brown, yellowish at tips; middle tibiae light yellowish-brown; tegulae brownish; wings hyaline, wing veins dark brown; marginal vein thickened, nearly black.

Type.—No. 3256, U.S.N.M. One male specimen reared from *Eriococcus rhodomirti* by E. Ernest Green, Punduloya, Ceylon.

ANAGYRUS, new genus (Howard).

Female.—Mandibles bidentate; antennae inserted below middle of face, scape greatly widened below; flagellum slender, cylindrical; pedicel cylindrical, shorter than first funicle joint; funicle joints 1 to 6 subequal in length and width, each one-half longer than pedicel; club somewhat flattened laterally, oval, not quite as long as two preceding funicle joints; eyes distant, faintly hairy, ocelli forming a right-angled triangle; head and mesonotum opaque; scapulae slightly separated at tips; wings with extremely short marginal cilia; marginal vein very short; stigmal moderately long, slightly curved; postmarginal very short; ovipositor slightly protruded.

Male.—Antennal scape moderately swollen; pedicel triangular, nearly as wide as long; funicle joints with moderately long, rather thick, pubescence, not growing in whorls; joints subcylindrical, attached to each other at lower border; joint 1 longest, four times as long as

pedicel; remaining joints gradually decreasing in length; axillæ meeting at tips; genitalia half as long as abdomen.

Resembles in many respects *Euscapus*, Dahlbom (= *Dinoecarsis*, Förster); but differs in position of ocelli, in the unlengthened stigmal vein, in the somewhat smaller but not expanded male scape, and in other lesser details.

ANAGYRUS GREENI, new species (Howard).

Female.—Length, 2 mm.; expanse, 4.1 mm. Head and mesonotum strongly shagreened and furnished with very short, close pile; mesopleura with a distinct longitudinal striation. General color dull reddish-yellow; scape black, whitish at tip; pedicel black, whitish at tip; first funicle joint black, remaining funicle joints and club silvery white; club with a yellowish shade at tip; cheeks behind eyes black; mandibles black at tip; metanotum and abdomen dusky or nearly black; legs pallid; wings hyaline.

Male.—Resembles female in sculpturing. Color black; mesopleura dark fuscous; legs a little darker than female.

Types.—No. 3257, U.S.N.M. Five females and four males, reared from *Maskellia zonata* by E. Ernest Green, Punduloya, Ceylon.

ANICETUS, new genus (Howard).

Female.—Belongs to the group of genera characterized by enormous laterally developed antennæ, viz, *Cerapterocerus*, *Euscimion*, *Mira*, *Anusia*, and *Rileya*. Eyes dorsal, rather close together, ocelli at the angles of a right-angled triangle; face strongly concave, with a very marked transverse dorsally arched carina at front of eyes; antennal scape reaches frontal arch, gradually widened and exfoliated, inserted slightly below middle of face; the six funicle joints all short and rapidly widening from the narrow pedicel, all subequal in length and all together shorter than club; club itself obliquely truncate from tip to base; eyes hairy; mesonotum slightly rounded; axillæ narrow, meeting at tips; ovipositor just showing; wings nearly uniformly cloudy; marginal vein shorter than stigmal, somewhat thickened; the cilia below bend of submarginal vein longer than elsewhere; all tarsi short and rather stout; spur of middle tibiæ stout and a trifle longer than first tarsal joint.

ANICETUS CEYLONENSIS, new species (Howard).

Female.—Length, 1.8 mm.; expanse, 4 mm. Face below carina densely shagreened, with a well-rounded longitudinal intra-antennal carina; antennal scape faintly shagreened, with faint brownish pile; mesonotum very delicately shagreened, somewhat lustrous, especially on mesoscutum; pile faint and brownish. General color dark honey-yellow, with faint purplish luster on mesoscutum, vertex, and sides of first segment of abdomen. Antennæ brownish toward tip, middle and hind tibiæ with a dark-brown dot on outer middle and another at base; first tarsal joint of hind legs brownish; middle tibiæ with distinct bristles

on outer margin; spiracular hairs of third abdominal segment long and distinct.

Type.—No. 3258, U.S.N.M. One female specimen reared from *Vinsonia stellifera*, Punduloya, Ceylon, by E. Ernest Green.

Genus COMYS, Fœrster.

Comys, FÆRSTER. Hymenop. Stud., II, 1856, p. 114.

COMYS RUFESCENS (Motschulsky).

Chiloneurus rufescens, MOTSCHULSKY, Bull. Soc. Imp. Nat. Mosc., XXXVI, 1863, p. 53.

This is the only one of the Motschulsky species recognized. The Russian author's specimens were taken by Nietner on the summit of Mount Patamas, and those received from Mr. Green were reared by him from *Lecanium coffeæ*.

Genus HOMALOPODA, Howard.

Homalopoda, HOWARD, Journ. Linn. Soc. Zool., XXV, 1894, p. 90.

HOMALOPODA CRISTATA, Howard.

Homalopoda cristata, HOWARD, Journ. Linn. Soc. Zool., XXV, 1894, p. 91.

The type specimens of this monotypical genus were collected by Mr. H. H. Smith on the Island of St. Vincent, British West Indies. A single female was received from Mr. Green, reared from *Aspidiotus secretus*. The insect has an Asiatic facies and may have been carried to the West Indies from the East Indies under scale insects on certain plants which were being imported.

Genus APHYCUS, Mayr.

Aphycus, MAYR, Verh. k. k. zool.-bot. Gesellsch. Wien, 1875, p. 695.

APHYCUS LICHTENSIÆ, new species (Howard).

Female.—Length, 1.3 mm.; expanse, 3 mm. General color reddish yellow; abdomen black, antennal scape black, whitish at tip; pedicel black, white at tip; funicle joints 1 to 4 black, fourth whitish above, 5 and 6 yellowish-white; club black; metasentellum blackish, tegule dark at tip, mesoscutum with two curved transverse narrow black lines, one on each side, reaching nearly to middle; all tibiae with three black bands more or less interrupted. Antennal scape moderately widened below; pedicel twice as long as wide, as long as three first funicle joints together; funicle joints gradually increasing in width from 1 to 4; 5 and 6 suddenly wider and longer. Club flattened, obliquely truncate, as long as funicle joints 5 and 6 together.

Type.—No. 3259, U.S.N.M. Eight female specimens reared from *Lichtensia koebelei* by E. Ernest Green, Punduloya, Ceylon.

Genus ARRHENOPHAGUS, Aurivillius.

Arrhenophagus, AURIVILLIUS, Ent. Tidsk. IX, 1888, pp. 144-145.

ARRHENOPHAGUS CHIONASPIDIS, Aurivillius.

Arrhenophagus chionaspidis, AURIVILLIUS, Ent. Tidsk. IX, 1888, p. 146.

This remarkable encyrtine, reared by Aurivillius in Sweden from *Chionaspis salicis*, has been reared in the United States from *Diaspis roseæ* at Kirkwood, Missouri, by Miss M. E. Murtfeldt, and from the same host at Champaign, Illinois, by Mr. W. G. Johnson. Mr. Green reared it in Ceylon from *Fiorinia saposoma*.

Subfamily EUPHELMINÆ.

Genus ANASTATUS, Motschulsky.

Anastatus, MOTSCHULSKY, Étud. entom., 8th ann., 1859, p. 116.

Antigaster, WALSH, Amer. Ent., II, 368 (1870).

ANASTATUS TACHARDIÆ, new species (Howard).

Male.—Length, 1.5 mm. Dark blue or blue-black; mandibles, tips of palpi, sutures of trochanters, tips of anterior tibiæ, and their tarsi, except last joint, pale; basal joint of hind tarsi and tibial spurs white; abdomen beneath piceous, with the sutures 1 and 2 whitish. Head and thorax above finely shagreened; antennæ filiform, pubescent, the flagellum brown-black, the funicle joints subequal, a little longer than thick, 4, 5, and 6 somewhat shorter than 1, 2, and 3, the scape short, not extending to middle ocellus, blue-black, pedicel rounded, blue-black. Thorax with complete, but not sharply defined, parapsidal grooves. Wings hyaline, the veins brown, the marginal vein as long as the submarginal, the stigmal and postmarginal veins short, equal in length, the stigmal slightly curved, ending in a short knob. Abdomen oblong, as long as the thorax.

Habitat.—Punduloya, Ceylon.

Type.—No. 3260, U.S.N.M. One male specimen, supposed by Mr. E. Ernest Green to have been reared from *Tachardia albizzia*.

For the suggestion as to the synonymy of Walsh's genus *Antigaster* with *Anastatus* the writer is indebted to Mr. Ashmead.

Subfamily ELACIININÆ.

Genus EUPLECTRUS, Westwood.

Euplectrus, WESTWOOD, Lond. Edin. Phil. Mag., I, 1832, p. 128.

EUPLECTRUS CEYLONENSIS, new species (Howard).

Female.—Length, 2.8 mm.; expanse, 6.3 mm. Resembles closely *E. furnius*, Walker (British West Indies). Stout, shining, bristly; pedicel of antennæ with a pair of long, stout bristles at base, and another pair, longer and stouter, at tip; mesonotum strongly shagreened, with two strong elongate longitudinal depressions just anterior to tip of scutellum; axillæ with strong and very broad depressions at articulation with scutellum; scutellum nearly smooth, very faintly aciculate; nearly all of thoracic bristles whitish, the pair next the tegulæ black.

Color black; antennal scape and pedicel honey-yellow, flagellum brown; tegulae and mouth parts and all legs, including coxae, honey-yellow; a large honey-yellow spot on venter of abdomen; indications of a corresponding dorsal spot, which is fainter in some specimens than in others; wings hyaline. The male does not differ, except sexually, from the female.

Differs from *E. furvus* mainly in the more pronounced sculpturing of the mesonotum, in the greater size and depth of the notal impressions, and in the greater length and strength of the bristles.

Types.—No. 3261, U.S.N.M. Many male and female specimens reared from the larva of *Euproctis fraterna* by E. Ernest Green, Punduloya, Ceylon.

Subfamily ENTEDONINÆ.

Genus HOLCOPELTE, Förster.

Holcopelte, FÖRSTER, Hymen. Stud., II, 78, 1856.

A species of this genus, in almost unrecognizable condition, labeled as having been reared from *Tachardia albizzia*, was among the parasites received. All of the species of this genus are hyperparasites, and this species may have for its host one of the foregoing insects described as parasitic upon *Tachardia*.

Subfamily TETRASTICHINÆ.

Genus TETRASTICHUS, Haliday.

Tetrastichus, HALIDAY, Trans. Ent. Soc. Lond., III, 297, 1843.

Several specimens of an unrecognizable species of this genus were also found in this collection, also labeled as having been reared from *Tachardia albizzia*. The species of this genus are also hyperparasites without exception, so far as known, and the true host of Mr. Green's forms to be found among the larger parasites which he reared from the lac insect.

Family MYMARIDÆ.

Admitting family rank for this interesting group of extremely minute parasitic Hymenoptera, as originally proposed by Haliday and later adopted by Ashmead, it is deemed advisable at the present time to establish two subfamilies, the first of which, called the Mymarinae, including those forms which have 4-jointed tarsi, will contain the genera *Mymar*, *Eustochus*, *Doriclytus*, *Cosmocoma*, *Caraphractus*, *Stictothrix*, *Anaphes*, *Anagrus*, and *Polyneuma*; while the second, which may be called the Gonatocerinae, and contains those forms which have 5-jointed tarsi, will include the genera *Gonatocerus*, *Camptoptera*, *Ooctonus*, *Limacis*, *Alaptus*, and *Litus*.

Subfamily MYMARINÆ.

ANTHEMUS, new genus (Howard).

Male.—Antennæ, 9-jointed: scape and bulla plainly differentiated, pedicel longer and broader than first funicle joint; funicle joints subequal in length and breadth, about twice as long as broad, each with a single whorl of very long hairs. Club attenuate at tip, as long as three preceding funicle joints together, undivided, and furnished with long hairs like the funicle joints—the hairs, however, being irregularly placed. Eyes distant, naked; ocelli large, placed in a nearly straight line; abdomen sessile, tarsi 4-jointed, wings as with *Anagyrus*.

Female.—Antennæ 8-jointed, pedicel swollen, two and a half times as long as wide, first funicle joint one-third as long as pedicel, much narrower, subcylindrical; second, third, fourth, and fifth funicle joints increasing gradually in length and width; club long ovate, longer than three preceding funicle joints together, slightly wider than fifth funicle joint, undivided; funicle and club with very sparse and short hairs; ovipositor slightly extruded; in other respects resembles male.

ANTHEMUS CHIONASPIDIS, new species (Howard).

Male and female.—Length, 0.536 mm.; expanse to tip of wings, 1.35 mm.; expanse to tips of cilia, 1.72 mm. General color yellow brown; darker at sides and base of abdomen and at sides of metanotum; eyes dark purple, ocelli lighter, reddish. Legs honey-yellow, hind femora darker. Funicle joints of male antennæ somewhat flask-shaped, the swelling of each joint at the insertion of the whorl of hairs giving a slightly constricted appearance to the distal half of the joint; hind wings with no discal cilia, except a single row of about six, extending from the end of the vein halfway to tip of wing; discal cilia of fore wings dense and strong.

Types.—No. 3262, U.S.N.M. Many male and female specimens reared by E. Ernest Green, Punduloya, Ceylon, from *Chionaspis granivis*.

Subfamily GONATOCERINÆ.

Genus LITUS, Haliday.

Litus, HALIDAY, Ent. Mag., I, 269, 1833.

LITUS ENOCKI, new species (Howard).

Female.—Length, 0.279 mm.; expanse to tip of wings, 0.79 mm.; expanse to tips of cilia 1.02 mm. Scape and pedicel swollen, funicle joints attenuate, first and second subequal in length, each about as long as pedicel; third and fourth a little shorter, fifth and sixth still shorter, slightly swollen; club longer than three preceding joints together, slightly broader, elongate ovate in shape. Color dark brown, legs, antennal scape, and pedicel lighter, abdomen lighter near base

below. Wings faintly infuscated, especially near base. Body stout, compact, abdomen sessile, thorax rather strongly arched.

Type.—No. 3263, U.S.N.M. Two female specimens reared by Mr. E. Ernest Green, Punduloya, Ceylon, from *Eriococcus*. Named for Mr. Fred. Enock, of London, who has devoted considerable attention to the Mymaridæ and has made the most beautiful slide mounts of these minute creatures which I have seen.

Family ICHNEUMONIDÆ.

Subfamily OPHIONINÆ.

Genus CHAROPS, Holmgren.

Charops, HOLMGREN, Svensk. Akad. Handl., 1858, n. 8, 39.

CHAROPS ERYTHROGASTER, new species (Ashmead).

Female.—Length, 6.5 mm. Head, thorax, and antennæ, except scape beneath, black, clothed with a fine grayish pubescence; scape beneath, legs, except middle and hind coxæ, and abdomen, except petiole, rufous; middle and hind coxæ and petiole black, first joint of hind trochanters, extreme base of hind femora, and tarsi more or less dusky; mandibles, palpi, and tegulæ whitish. The head, antero-posteriorly, is thin, with the vertex acute; eyes subreniform; antennæ filiform, extending to the second abdominal segment, with several of the ante-penultimate joints transverse, about three times wider than long. Thorax short ovate, closely, opaquely punctate, without parapsidal furrows, the metathorax abrupt, without carinæ, the spiracles oval. Wings hyaline, the veins brown-black, the stigma narrow, lanceolate, the third discoidal cell longer than the first, the second recurrent nervure joining the cubitus behind the transverse cubital nervure. Abdomen, with the petiole, twice as long as the thorax, compressed, the petiole as long as the middle femur, the body of abdomen more than twice as long as the petiole, the ovipositor hardly projecting, with black sheaths.

Male.—Length, 6 mm. Agrees with the female, except that all coxæ are black, the middle legs are more or less piceous, the hind legs black, while the abdomen, except the ventral membranous part, is entirely black.

Habitat.—Punduloya, Ceylon.

Type.—No. 3264, U.S.N.M. One female and one male, bred by Mr. E. Ernest Green, from the larva of *Euterota*, sp.

Subfamily CRYPTINÆ.

Genus HEMITELES, Gravenhorst.

Hemiteles, GRAVENHORST, Ichn. Eur., II, p. 780, 1829.

HEMITELES BRACHYCYTTARI, new species (Ashmead).

Female.—Length, 5 mm.; ovipositor about one third the length of abdomen. Head and thorax black, minutely, closely punctate; clypeus polished, impunctate; mandibles, palpi, annulus on antennæ, superior

margin of scape, anterior and middle coxæ, annulus at base of hind tibiæ, and the apical margins of first, second, third, fourth, and sixth segments of abdomen white; rest of legs, except hind tibiæ and tarsi, reddish yellow. Head with the occiput concave, polished, the eyes very large, occupying the whole side of the head: antennæ very slightly thickened toward apex, 26-jointed, the flagellar joints 1 to 3 long, cylindrical, subequal, the fourth about two-thirds as long as the third, the fifth and beyond gradually becoming shorter and shorter so that the terminal joints are not longer than wide. Thorax with parapsidal grooves, the metathorax areolated but with the lateral longitudinal carinæ wanting. Abdomen, except petiole and the apical margins of segments, as before mentioned, black, the petiole, except the white apical margin, reddish yellow, the second and third segments, except the white apical bands, are closely, opaquely shagreened, while the petiole and the rest of the segments are smooth and shining.

Habitat.—Punduloya, Ceylon.

Type.—No. 3265, U.S.N.M. One female, reared by Mr. E. Ernest Green from the larva of *Brachycyttarus subteralbatus*, Hampson.

Subfamily PIMPLINÆ.

Genus POLYSPHINCTA, Gravenhorst.

Polysphincta, GRAVENHORST, Hymen. Eur., III, 1829, p. 112.

POLYSPHINCTA CEYLONICA, new species (Ashmead).

Female.—Length, 4 mm. Polished black; scape beneath, mesopleura and scutellum red; mandibles, palpi, tegulae, and legs, except a spot at apex of hind tibiæ, and hind tarsi, except first joint toward base, which are fuscous, white. Wings hyaline, the stigma and veins brown. Metanotum with two median carinæ.

Habitat.—Punduloya, Ceylon.

Type.—No. 3266, U.S.N.M. One female, reared by Mr. E. Ernest Green from an unknown spider.

Family BRACONIDÆ.

Subfamily BRACONINÆ.

Genus BRACON, Fabricius.

Bracon, FABRICIUS, Syst. Piez., p. 102, 1801.

BRACON GREENI, new species (Ashmead).

Female.—Length, 2.5 to 3 mm.; ovipositor two-thirds length of abdomen. Brownish yellow; disk of metathorax, extreme apex of second abdominal segment and large dorsal blotches on third and fourth segments black. Head and thorax subopaque, almost smooth; antennæ 24-jointed, brown-black, and nearly as long as the body. Wings hyaline, the stigma and veins brown, the second branch of the radius

about three times as long as the first, the second submarginal cell being a little longer than the first; the recurrent nervure joins the first submarginal cell a little beyond its apical third. Abdomen broadly ovate and shagreened, the segments 2 to 4 subequal, the following a little shorter.

Male.—Length, 2 to 2.5 mm. Agrees with the female, except that the antennæ are 25-jointed, longer than the body, while segments 3 to 5 above are black.

Habitat.—Punduloya, Ceylon.

Types.—No. 3267, U.S.N.M. Three females and two males, reported by Mr. E. Ernest Green as having been bred from *Tachardia albizzia*. It is likely, however, that he was deceived in this, and that the tineid larva mentioned in the introduction as preying upon the *Tachardia* is in reality the host of this *Bracon*.

APHRASTOBRACON, new genus (Ashmead).

Wings ample, the transverse median nervure received by the median cell before its apex, the submedian cell on the externo-medial nervure therefore distinctly shorter than the median; marginal cell extending to tip of wing; wings with the submedian cell very short, less than one-third the length of the median. Head transverse, the occiput immargined; eyes very large, occupying the whole side of the head, the face in consequence very narrow; maxillary palpi 5-jointed, labial palpi 3-jointed; otherwise as in typical species of *Bracon*.

It is extremely difficult, according to our present classification, to decide to which subfamily of the Braconidæ this remarkable genus belongs. It belongs to Wesmæl's division Cyclostomi, and on account of the immargined occiput is allied to the subfamilies Braconinæ and Exothecinæ, but on account of the shortness of the submedian cell, which readily distinguishes the genus from all others yet described, it will not fit into either of these; the former has the submedian and median cells equal, while in the latter the submedian cell is the longer. It may therefore represent a new subfamily if the length of these cells is still to be considered of primary importance.

At present I prefer to place it in the subfamily Braconinæ, since I am inclined to believe that too much importance has been given to the length of the basal cells.

APHRASTOBRACON FLAVIPENNIS, new species (Ashmead).

Male.—Length, 4.5 mm. Brownish-yellow; eyes black, very large, occupying the whole side of the head and leaving the face very narrow. Antennæ about 48-jointed, as long as body, brown-black, the scape and pedicel beneath brownish-yellow; the scape is about three times as long as thick, the pedicel very small, the first joint of flagellum longer than wide and the longest flagellar joint, the others all being a little wider than long. The head and thorax, except the face, which is

finely shagreened, are smooth and shining, the parapsidal furrows complete. The abdomen is oblong, the second segment with a basal triangular elevation, the first being grooved at the sides and forming a wedge-shaped plate; the third and fourth segments are delicately sculptured. Wings large, yellowish-hyaline; the costa, stigma, and veins yellow. The submedian cell is shorter than the median, the recurrent nervure joins the first submarginal cell at its apical fifth, the second abscissa of radius is about two and one-half times as long as the first, the second transverse cubitus being scarcely longer than the first abscissa of the radius, making the second submarginal cell very narrow.

Habitat.—Punduloya, Ceylon.

Type.—No. 3268, U.S.N.M. One male specimen bred from *Tachardia albizzie* by Mr. E. Ernest Green.

Subfamily MICROGASTERINÆ.

Genus APANTELES, Förster.

Apanteles, FÖRSTER, Verh. pr. Rheinl. Natur. Ver., p. 245, 1862.

APANTELES PRATAPÆ, new species (Ashmead).

Female.—Length, 2.5 mm. Black, shining, the head and thorax rather densely, confluent punctate; scape, pedicel, and flagellum beneath for two-thirds its length, and legs, except hind coxæ, brownish-yellow, the extreme tip of hind tibiæ and hind tarsi subfuscous; palpi and tegulæ white; abdomen, except plate on first segment, and apex brownish-yellow. Face subconvex, with a slight median ridge; antennæ a little longer than the body; postsentellum with two foveolæ; metathorax rugulose, without carinæ. Wings hyaline, the stigma and veins brown, the upper side of the areolet open, two thirds the length of the first branch of radius, the submedian cell as much longer than the median cell as the length of the second discoidal cell. Abdomen short, hardly as long as the thorax, the ovipositor very short, not projecting beyond the tip of abdomen, plate of first segment twice as long as wide, sparsely punctate, the sides parallel; second segment more than twice as long as the third, with a median carina.

Habitat.—Punduloya, Ceylon.

Types.—No. 3269, U.S.N.M. Five female specimens bred by Mr. E. Ernest Green, from larva of *Pratapa deva*.

APANTELES TIVACHOLÆ, new species (Ashmead).

Female.—Length, 2.5 to 3 mm. Agrees well with the preceding species, except that only the two basal joints of antennæ are brownish-yellow. The legs are brownish-yellow, but *all* the coxæ are black, while the apex of hind femora, apex of their tibiæ and their tarsi are fuscous; the scutellum is smoother; the abdomen is as long as the thorax and,

except venter, the membranous margins of first and second segments and lateral dorsal spots on third and fourth segments, which are yellow and sometimes confluent, is black; the plate of first segment is long trapezoidal, more than twice as long as wide at apex and shagreened apically; the second segment is as long as the fourth, feebly shagreened; the third is very short.

Male.—Length, 2.5 mm. Agrees well with female, except that the antennæ are longer, entirely black, while the abdomen is smaller, narrower and except the basal half of venter and lateral margins of basal segment, wholly black; the second segment, as well as the following, smooth and polished.

Habitat.—Punduloya, Ceylon.

Types.—No. 3270, U.S.N.M. Thirty-six females and fourteen males bred by Mr. E. Ernest Green from larva of *Tirachola plagiata*, Walker.